Future Flight Design			
2007 Science			
Grade Expectations			
Vermont Science			
Grades 5-6			
Activity/Lesson	**State**	**Standards**	
Air Transportation Problem	VT	SCI.5-6.S5-6:1.2	Identifying multiple variables that affect a system and using the variables to generate experimental questions that include cause and effect relationships.
Air Transportation Problem	VT	SCI.5-6.S5-6:5.1	Determining an appropriate representation (line graph in addition to prior examples) to represent their findings accurately.
Air Transportation Problem	VT	SCI.5-6.S5-6:7.3	Considering all data when developing an explanation/conclusion.
Air Transportation Problem	VT	SCI.5-6.S5-6:20.1	Design an investigation to collect evidence about an object's inertia and explaining their observation in terms of the object's tendency to resist a change in motion.
Aircraft Design Problem	VT	SCI.5-6.S5-6:1.2	Identifying multiple variables that affect a system and using the variables to generate experimental questions that include cause and effect relationships.
Aircraft Design Problem	VT	SCI.5-6.S5-6:19.1	Measuring and calculating speed (the distance an object moves over a measured amount of time).
Aircraft Design Problem	VT	SCI.5-6.S5-6:19.a	Speed indicates the rate at which an object is traveling.
Aircraft Design Problem	VT	SCI.5-6.S5-6:19.b	Speed is a relationship between the distance an object travels and time elapsed.
Aircraft Design Problem	VT	SCI.5-6.S5-6:20.1	Design an investigation to collect evidence about an object's inertia and explaining their observation in terms of the object's tendency to resist a change in motion.
Aircraft Design Problem	VT	SCI.5-6.S5-6:20.a	Inertia is the tendency of an object to resist a change in motion and depends upon the object's mass. Stationary objects tend to remain stationary; moving objects tend to continue moving (Newton's First Law).
Aircraft Design Problem	VT	SCI.5-6.S5-6:21.1	Investigating variables that change an object's speed, direction, or both, and identifying and describing the forces that cause the change in motion.
Aircraft Design Problem	VT	SCI.5-6.S5-6:21.a	A force applied to a moving object will change the object's speed, direction or both.
Aircraft Design Problem	VT	SCI.5-6.S5-6:21.b	Friction is a force that often opposes motion.

Aircraft Design Problem	VT	SCI.5-6.S5-6:22.a	Gravity is the force that holds objects to the earth's surface, keeps planets in orbit around the sun, and governs the rest of the motion in the solar system.
Aircraft Design Problem	VT	SCI.5-6.S5-6:22.b	The force of gravity pulls toward the center of mass of an object.
Future Flight Design			
2007 Science			
Grade Expectations			
Vermont Science			
Grades 7-8			
Activity/Lesson	**State**	**Standards**	
Air Transportation Problem	VT	SCI.7-8.S7-8:3.1.d	Identification of tools and procedures for collecting data and reducing error.
Air Transportation Problem	VT	SCI.7-8.S7-8:4.2	Using technology to collect, quantify, organize, and store observations (e.g., use of probe).
Air Transportation Problem	VT	SCI.7-8.S7-8:6.1	Identifying, considering and addressing experimental errors (e.g., errors in experimental design, errors in data collection procedures).
Air Transportation Problem	VT	SCI.7-8.S7-8:7.3	Documenting and explaining changes in experimental design.
Air Transportation Problem	VT	SCI.7-8.S7-8:8.2	Explaining limitations for generalizing findings.
Air Transportation Problem	VT	SCI.7-8.S7-8:21.1	Diagramming or describing, after observing a moving object, the forces acting on the object before and after it is put into motion (Students include in their diagram or description, the effect of these forces on the motion of the object.)
Aircraft Design Problem	VT	SCI.7-8.S7-8:14.a	Increased temperature of substances causes increased motion of the atoms and molecules in the substance.
Aircraft Design Problem	VT	SCI.7-8.S7-8:19.2	Describing and explaining how the acceleration of an object is proportional to the force on the object and inversely proportional to the mass of the object.
Aircraft Design Problem	VT	SCI.7-8.S7-8:19.b	Momentum is the characteristic of an object in motion that depends on the object's mass and velocity. Momentum provides the ability for a moving object to stay in motion without an additional force.
Aircraft Design Problem	VT	SCI.7-8.S7-8:19.c	Acceleration is a relationship between the force applied to a moving object and the mass of the object (Newton's Second Law).

Aircraft Design Problem	VT	SCI.7-8.S7-8:21.1	Diagramming or describing, after observing a moving object, the forces acting on the object before and after it is put into motion (Students include in their diagram or description, the effect of these forces on the motion of the object.)
Aircraft Design Problem	VT	SCI.7-8.S7-8:21.a	An object that is not subjected to a force will continue to move at a constant speed and in a straight line.
Aircraft Design Problem	VT	SCI.7-8.S7-8:21.b	If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another,depending on their direction and magnitude.
Aircraft Design Problem	VT	SCI.7-8.S7-8:21.c	Unbalanced forces will cause changes in speed or direction of an object’s motion.
Aircraft Design Problem	VT	SCI.7-8.S7-8:22.b	The force of gravity is hard to detect unless at least one of the objects has considerable mass.